Notice of Allowability	Application No.	Applicant(s)	
	09/998,564	FULLER ET AL.	
	Examiner	Art Unit	
	Tesfaldet Bocure	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *11/16/01*.

2. ☒ The allowed claim(s) is/are *1-32*.

3. ☒ The drawings filed on *16 November 2001* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 11/16/01
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

TESFALDET BOCURE
PRIMARY EXAMINER

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance: the claimed subject matter in claims 1-32 is allowable because the arts of record fail to teach or fairly suggest the claimed " A method for parallel interference cancellation comprising:

a) ***generating weighted symbol estimates from symbol estimates corresponding to a plurality of user signals forming at least part of an input signal, wherein each weighted symbol estimate is based on at least one previous symbol estimate given symbol*** (see weighting output from 72A to 72B in fig.3)***;***

b) processing the weighted symbol estimates provide for:

i)modulation of the weighted symbol estimates corresponding to each user signal to provide individual modulated signals; and ii) filtering the individual modulated signals with channel estimates corresponding to the user signals create individual regenerated signals;

c***) for each user signal, subtracting individual regenerated signals corresponding all other user signals from the input signal create an individual signal*** (see multiple regenerated input to subtractors MAI 66A-66B);

d) demodulating each individual signal to provide a corresponding demodulated individual signal; and

e)processing each demodulated individual signal determine the symbol estimates each symbol included therein as in claim 1;

A system for parallel interference cancellation in association with an input signal including a plurality of user signals comprising:

a***) parallel interference cancellation circuitry adapted to subtract individual regenerated signals corresponding to all other user signals from the input signal to create an individual signal for each user signal***(see multiple regenerated input to subtractors MAI 66A-66B);

b) demodulation circuitry for demodulating each individual signal to provide a corresponding demodulated individual signal;

c) symbol decision circuitry for processing each demodulated individual signal to determine symbol estimates for each symbol included therein;

d) ***symbol processing circuitry adapted to generate a weighted symbol estimate based on at least one previous symbol estimate for a given symbol for each symbol estimate*** (see weighting output from 72A to 72B in fig.3); and

e) ***regeneration circuitry adapted to:***

i) modulate the weighted symbol estimates corresponding to each individual signal to provide individual modulated signals (see weighting output from 72A to 72B in fig.3)***; and***

ii) process the individual modulated signals with channel estimates corresponding to the individual signals to create the individual regenerated signals as in claim 11;

A system for parallel interference cancellation wherein a plurality of user signals form at least part of an input signal and weighted symbol estimates corresponding to the plurality of user signals are initially generated, the system comprising:

means for processing the weighted symbol estimates to provide for:

modulation of the weighted symbol estimates corresponding each user signal provide individual modulated signals; and filtering the individual modulated signals with channel estimates corresponding to the user signals to create individual regenerated signals;

means for subtracting individual regenerated signals corresponding to all other user signals from the input signal to create an individual signal each user signal (see multiple regenerated input to subtractors MAI 66A-66B);

means for demodulating each individual signal to provide a corresponding demodulated individual signal;

means for processing each demodulated individual signal to determine symbol estimates for each symbol included therein; and

means for generating a weighted symbol estimate based on a previous symbol estimate for a given symbol as in claim 21;

A method for parallel interference cancellation comprising:

a) processing symbol estimates corresponding to a plurality of user signals forming at least part of an input signal to provide for:

i) modulation of the symbol estimates corresponding to each user signal to provide individual modulated signals; and ii) filtering the individual modulated signals with channel estimates corresponding to the user signals to create individual regenerated signals, wherein the individual regenerated signals are represented by chips;

b) generating weighted chips for each chip, wherein each weighted chip is based on at least one previous chip estimate for a given chip and the weighted chips for each individual regenerated signal form weighted individual signals;

c) for each user signal, subtracting weighted individual signals corresponding to all other user signals from the input signal to create an individual signal;

d) demodulating each individual signal to provide a corresponding demodulated individual signal; and

e) processing each demodulated individual signal to determine the symbol estimates for each symbol included therein as in claim 26; and

A system for parallel interference cancellation in association with an input signal including a plurality of user signals comprising:

a) ***parallel interference cancellation circuitry adapted to subtract weighted individual signals corresponding to all other user signals from the input signal to create an individual signal for each user signal*** (see multiple regenerated input to subtractors MAI 66A-66B) ;

b) demodulation circuitry for demodulating each individual signal to provide a corresponding demodulated individual signal;

c) symbol decision circuitry for processing each demodulated individual signal to determine symbol estimates for each symbol included therein;

d) regeneration circuitry adapted to:

i) modulate the symbol estimates corresponding to each individual signal to provide individual modulated signals; and

ii) process the individual modulated signals with channel estimates corresponding to the individual signals to create individual regenerated signals; wherein the individual regenerated signals are represented by chips; and

e) ***symbol processing circuitry adapted to generate weighted chips for each chip, wherein each weighted chip is based on at least one previous chip estimate for a given chip and the weighted chips for each individual regenerated signal form weighted individual signals*** (see weighting output from 72A to 72B in fig.3)as in claim 31."

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US patent numbers 6,014,373, 6,647,022 and 6,661,835 issued to Schilling et al., Mailaender and Sugimoto et al. respectively; and publications "Multistage Detection in Asynchronous Code-Division Multiple-Access Communication" and "Multi-Stage Detection Scheme for CDMA System" by Mahesh et al. and Rezaaifa et al. respectively disclose a multistage spread spectrum receiver having means for cancellation an interference.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tesfaldet Bocure whose telephone number is (571) 272-3015. The examiner can normally be reached on Mon-Thur (7:30a-5:00p) & Mon.-Fri (7:30a-5:00p).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tesfaldet Bocure
Primary Examiner
Art Unit 2631

T.Bocure